

### **Remarks**

Claims 1-85 are currently pending in the Application. Claims 3, 7-11, 14-17, 19-22, 25, 29-33, 36-39, 41-44, 47, 51-55, 58-61, 63, 73-77 and 82-85 are withdrawn. Claims 1, 2, 4-6, 12, 18, 23, 24, 26-28, 34, 40, 45, 46, 48-50, 56, 62 and 64-72 are rejected. Claims 13, 35 and 57 are objected to.

Applicant thanks the Examiner for allowing claims 13, 35 and 57 if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### **Claim rejections – 35USC §112**

#### **Examiner Item 2**

#### **Regarding Claim 1:**

Examiner rejects claims 67 and 68 under 35USC112 as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically the Examiner argues a serializer, a data edge synchronizer and wide-band limiting amplifiers are devices and hence not coupled to data but to other devices. The applicant appreciates and notes with gratitude the suggestion that devices are coupled to receive the digital data.

Nevertheless, the Applicant respectfully points out claims are not read in a vacuum but in the context and with reference to the specification and drawings. Figure 9 and page 16 lines 23:30 clearly show the connection of the serializer to the input digital data, producing an output of serial data bits to the data edge synchronizer. Figure 9 and specification page 17 line 20 to page 18 line 2 clearly show the wide band limiting amplifier's coupling to the serial stream of digital data bits. The claims distinctly claim the subject matter of Applicant's invention in the context of the specification and drawings and because a person skilled in the art will realize a serializer, a data edge synchronizer and wide-band limiting amplifiers are coupled to data.

**Regarding Claim 1,2,4,18, 23,24,26,40,45,46,48,62 and 66:**

Claims 1,2,4,18, 23,24,26,40,45,46,48,62 and 66 are rejected under 35USC §103 as obvious over Gerdes (US4989219) in view of Toman (US4037173). Applicant respectfully traverses the rejection and request the Examiner withdraw the rejection.

A prima facie case of obviousness requires the Examiner to articulate a rationale for combining references. There are several sources for the rationale such as use of a known technique to improve similar devices or some teaching suggestion or motivation. Applicant contends the Examiner has not made a prima facie case of obviousness because the Examiner has not articulated a rationale for combining the cited references and the cited references are not combinable as the Examiner has suggested. Furthermore not every limitation of the claims is taught by the cited references.

The Examiner finds equivalence between the claimed gated carrier waves gated by said digital data and Gerdes. The cited section in Gerdes (col 2 lines 39-46) says the carrier wave is gated by an analog switch (Col 2 lines 42-43), not digital data and Gerdes fails to teach the claim 1 limitation of “digitally gated carrier waves gated by said digital data”. The Examiner relies on Toman for teaching a digitally gated radio frequency energy or signal (Col 2 lines 24-29). The Examiner gives as a rational for combining the references to “provide an improved and economical apparatus for generating two different modulated carriers”, citing Toman (col 1 lines 43-46). Perhaps the Examiner is citing Toman for the motivation to combine references under the teaching, suggestion or motivation test.

**Lack of articulated rationale to combine references**

Under the improving an existing apparatus test, the Examiner has to identify the base device being improved, the known technique in the reference that would be an improvement and finally a finding of predictable results and an improved system. See *In re Nilssen*, 851 F.2d 1401 (Fed. Cir. 1988) and *Ruiz v. A.B. Chance Co.* 357 F.3d 1270 (Fed. Cir. 2004).

The Examiner has not identified the base device being improved, the improvement or the rational for predictable results. The Examiner is requested to identify the base device and the component or subsystem being substituted with the device of the other reference.

If the Examiner is using the TSM test then the Examiner is requested to articulate the rationale for combining Gerdes and Toman. One of ordinary skill in the art could not have combined the claimed elements by known methods (e.g., due to technological difficulties). Gerdes is directed to recording on magnetic media and Toman is directed to radio navigation aids. By what rational would a component of either reference be substituted in the other and by what rational would there be an expected improvement in the function of either?

**References cited are not combinable**

One skilled in the art would not combine Gerdes with Toman because they are directed to different problems each distinct from the other and the present invention. The present application is directed to On Off Keying (OOKing) for communication. Gerdes explicitly teaches away from OOKing (col 1 lines 27 to 32) and states data communication is accomplished with pulse coded modulation (PCM) or frequency shift keying (FSK) col 1 lines 27 to 35, among other techniques. Toman teaches transmitting bursts of a carrier wave where the information is encoded in the duration of the bursts col 2 lines 24-31. This is pulse width modulation, not OOKing. The Examiner is respectfully requested to explain, as required by MPEP§2142, why a person building an On Off Keying communication system would combine Gerdes, despite his teaching away from OOKing, with Toman's using pulse width modulation?

Applicant respectfully suggests the Examiner is using applicant's disclosure impermissibly as a road map for building an OOKing communication system – picking off essential components in prior art based on the teaching of applicant's specification.

**The references cited by the Examiner do not teach each and every limitation of the claims.**

A key element of communication by On Off Keying is the synchronization between a transmitter and a receiver. This is reflected in Applicant's claim 1 limitation of counting received pulses: "wherein said receiver determines a state of said digital data by counting cycles of the at least one digitally gated carrier wave". The Examiner interprets the demodulation of Gerdes in col 1 lines 58-62 as equivalent to counting cycles in an OOKing communication system. The Examiner is giving Gerdes too much credit by equating the modulation of Gerdes with all forms of modulation. MPEP 2141.02 requires the prior art be considered as a whole. The cited passage from Gerdes states it would be desirable to modulate every half wave of a carrier with a plurality of digital bits. This could be FSK or PCM or any other encoding scheme suggested by Gerdes. Given Gerdes admonition against direct transmission of digital data in a wireless communication system (col 1 lines 30-32) and that Gerdes is directed to storing data on magnetic tape, where does the Examiner find the counting of cycles in Gerdes as required by Applicant's claimed invention?

Respectfully, the Examiner has not found each and every limitation of Applicant's invention in the cited references and has not made a prima facie case of obviousness by describing with specificity how one would be motivated to combine Gerdes with Toman into an OOKing communication system.

For the reasons given above, Applicant respectfully requests the rejection to claims 1,2,4,18, 23,24,26,40,45,46,48,62 and 66 under 35USC103(a) be withdrawn.

Re claim 2.

The Examiner is requested to specify how a person takes an invention directed to storing a modulated carrier wave on magnetic tape (Gerdes) plus Toman and comes up with a OOKing communication system that operates in free space, particularly since Toman does not teach a receiver.

Re Claims 4, 18, 23

Claim 4, 18, are allowable in so far as parent claim 1 is allowable.

Claims 23, 24, 26, 40, 45, 46, 48, 62 are allowable for the same reasons as for claims 1 and 2 since if the apparatus is allowable then so too is the method.

**Regarding Claims 5, 27, and 49:**

Claim 5, 27 and 49 are rejected under 35USC103(a) as being unpatentable over Gerdes et al (US4989219) and Toman 4037173) in view of Yousefi et al (US6957078).

Dependent claims 5, 27 and 49 are allowable as the claimed limitations in the corresponding independent claims are allowable.

In view of the above differences between dependent claim 5, 27 and 49 of the present application and the novelty of independent parent claims 1, 23 and 45 the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

**Regarding Claim 6, 28 and 50:**

Claim 6, 28 and 50 are rejected under 35USC103(a) as being unpatentable over Gerdes et al, Toman and Yousefi et al in view of Staszewski et al (US20020186782)

Claims 6, 28, and 50 are allowable as the claimed limitations in the corresponding independent claims are allowable.

In view of the above differences between dependent claim 6, 28, and 50 of the present application and the novelty of independent parent claims 1, 23 and 45 the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

**Regarding Claim 12, 34, and 56:**

Claims 12, 34 and 56 are rejected under 35USC103(a) as being unpatentable over Gerdes et al and Toman in view of Bobier (US6968014) and further in view of Paul (US4087753).

Claim 12 and the corresponding claims 34 and 56 require counting the specified number of cycles present or absent in the carrier wave to indicate a state of digital data. The references cited by the Examiner do not teach this limitation.

Bobier cited by the examiner does not teach counting cycles. The Examiner cites Bobier for the proposition of detecting a digital signal as the presence or absence of a carrier wave (col 5 lines 13-16). The Examiner then cites Paul for counting cycles in the received carrier where the Examiner interprets the data pulse signal as a carrier wave. However, this interpretation is counter to figure 7 of Paul and the explanation in col 27 lines 42 - 55. Paul counts the number cycles in the oscillator output 204 in counters 236 and 238. The oscillator is not the received carrier (input). The input 46 (col 10 lines 56-66) passes through the receiver 82 and gates counting the oscillator output with the received signal (col 27 lines 42-55). The output 98 represents counts of oscillator 204 and that equates to counts of the input if and only if Paul synchronizes the frequency of the input with the frequency of the oscillator. Paul does not teach the synchronization nor counting the cycles in the received carrier 46 as required by the claim.

In view of the above differences between claim 12, 34 and 56 of the present application and the teachings of Bobier and Paul, not every limitation of the rejected claims are taught by the cited references. Moreover, the motivation cited by the Examiner, col 2 lines 19-20 of Paul motivates an improvement in any generic communication system but not necessarily the design of an OOKing system of communication. The motivation cited by the Examiner does not articulate how the teachings of one reference are used to improve a device in another reference with predictable results.

Applicant respectfully suggests the Examiner is engaged in impermissible hindsight seeking references that might be adapted to fit a particular function in the present application.

In view of the above and the novelty of independent claim 12, 34 and 56, the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

**Regarding Claim 64**

Claim 64 is rejected under 35USC103(a) as being unpatentable over Gerdes et al and Toman in view of White et al (US20010005145). Claim 64 adds a limitation to the system and in particular the receiver to operate at radio or optical frequencies.

The Examiner identifies the motivation to combine Gerdes, Toman and White as to improve testability of a circuit. A prima facie case of obviousness, with improvement of an existing device providing the motivation, requires the Examiner to articulate the rationale for combining, the components combined (with no change in their respective function) and that the result was predictable. Applicant respectfully contends the examiner is impermissibly combining references because combining the receiver of White with Gerdes and Toman will not result in a device that meets the claimed elements. Paragraph 0019 of White describes a capability to receive electromagnetic radiation without specifying how or by what device. Paragraph 0047 likewise describes receiving electromagnetic radiation. Neither paragraph describes photodetecting as required by claim 64. Moreover, figure 9 of White supposedly describes a structure for receiving electromagnetic radiation but the structure presented will provide an average value of the input received signal whereas the present invention requires the counting of received cycles. An average value is inconsistent with counting cycles. Hence White does not provide an element that will operate in the claimed invention.

In view of the missing articulation of reasons for combining references consistent with the cited motivation, the unsuitability of White's receiver to support counting cycles, and that White does not teach photodetecting, the Examiner has not made a prima facie case of obviousness. Moreover, the novelty of independent parent claim 45, as discussed above under claim 1 implies dependent claim 64 is not obvious. The Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

#### **Regarding Claim 65**

Claim 65 is rejected under 35USC103(a) as being unpatentable over Gerdes et al and Toman and White et al (US20010005145) in view of Vatis (US4602226). The Examiner cites Vatis for adding means for detecting a received radiated electrical signal. In particular, the Examiner states Vatis teaches a diode detector (diodes 224a-224d in

figure 3). However, according to the text of Vatis, in particular col 10 line 63 to col 11 line 2, the diodes form an RF switch. A switching diode such as a PIN diode is not a microwave detector diode. The diode switch selects between modified phase carriers while the diode detector of the present invention produces a baseband digital on/off bit format signal. The two are not equivalent or interchangeable. In particular using the diodes of Vatis requires a change in function from switching to microwave detection.

The Examiner asserts the motivation in Vatis to provide novel gated RF carrier signal modulation would lead one to combine Vatis, White, Gerdes and Toman. A prima facie case of obviousness, with improvement of an existing device providing the motivation, requires the Examiner to articulate the rationale for combining, the components combined (with no change in their respective function) and that the result was predictable. Applicant respectfully contends the examiner is impermissibly combining references because the transmitter's diode switch of Vatis can not be used without an impermissible change in function to achieve claim 65's diode detector in a receiver.

Applicant respectfully requests the Examiner articulate the predictable results from the combination, consistent with maintaining the function of the elements combined.

In view of the above differences between dependent claim 65 of the present application and the teachings of the references, and the novelty of the independent parent claim (based on the arguments above for claim 1) the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

**Regarding Claims 67 and 78:**

Claims 67 and 78 are rejected under 35USC103(a) as being unpatentable over Luhman et al (US20040223557) in view of Ainsworth (US5245630)



The Examiner equates the gating circuit called out in claims 67 and 78 with the buffer 120 in figure 9 (paragraph 45 – 51) of Luhman. Claims 67 and 78 requires the gating circuit to gate at least one carrier signal according to each digital bit. The Examiner has not identified the prior art in Luhman that performs the “gating at least one carrier signal”. The Examiner may argue this gating function may be equated to variable gain unit 110 in figure 9 per paragraph 51 of Luhman. However the modulation in Luhman does not satisfy the claim limitation of gating according to **each** digital bit (emphasis added). Luhman amplifies the carrier (output of converter 108) according to a two bit pattern b2b1 seen on the data outputs of flip-flops 116 and 118. The claimed limitation requires gating according to a one bit pattern and only a one bit pattern (as required by the inclusion of **each** in the claim), not a pair of bits.

Luhman’s amplification of the carrier signal is not comparable to the gating of the present invention. In Luhman, the output amplitude is modulated per the two bit pattern b2b1 (figure 10 and paragraph 51). According to Luhman, the output is either not amplified, or amplified by a first, second or third amount – but the output is always present. An always present output is not comparable to gating. Gating requires the output to be either present or absent, not taking a range of values.

The Examiner may argue that one skilled in the art would modify Luhman to amplify the output of converter 108 to accomplish gating according to each digital bit. However, that would teach away from Luhman which is directed to modulating a carrier to encode a more than one bit of data (paragraph 3). If the Examiner offers this argument, the Applicant requests where one skilled in the art would find the teaching, suggestion, or motivation to modify Luhman so it does not perform its intended function.

Because the Examiner has not identified every claimed limitation in the references the Examiner has not made a prima facie case of obviousness.

In view of the above differences between independent claims 67 and 78 of the present application and the disclosure in Luhman, the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

**Regarding Claims 68, 69, and 79**

Claims 68, 69, and 79 are rejected under 35USC103(a) as being unpatentable over Luhman et al (US20040223557) and Ainsworth (US5245630) in view of Cheng (US4789838)

The claimed limitations in claims 68, 69 and 79 have been analyzed with respect to claims 67 and 78. In view of the non-obviousness of claims 67 and 78, the Applicant respectfully requests the rejection to claims 68, 69 and 79 based on 35USC103(a) be withdrawn.

**Regarding Claims 70-72, 80 and 81:**

Claims 70-72, 80 and 81 are rejected under 35USC103(a) as being unpatentable over Luhman et al (US20040223557) and Ainsworth (US5245630) in view of Toman (US4037173).

The claimed limitations in claims 70-72, 80 and 81 have been analyzed with respect to claims 67 and 78. In view of the non-obviousness of claims 67 and 78, the Applicant respectfully requests the rejection to claims 70-72, 80 and 81 based on 35USC103(a) be withdrawn.

### **Conclusion**

In view of the above, reconsideration and allowance of all the claims are respectfully solicited.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 50-3984. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 50-3984.

Respectfully submitted,

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